

10-23

DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE

yl NATIONAL PARK

File Copy

(Monthly Reports)

FILE NO. 143

February 1922

143-
(February)
1922

143
Feb.
=

March 22, 1922.

Dear Sir:

I enclose herewith three copies of page 6 of my Monthly Report of the Yellowstone National Park for the month of February, 1922, with changes to correct several errors which occurred in reporting leaves of absence of employees.

Please substitute the corrected page for the one in error which went on with the report dated March 9, 1922, on the three copies of the report which were forwarded.

Cordially yours,

Chester A. Lindsley,
Acting Superintendent.

Inclosures.

The Director,
National Park Service,
Department of the Interior,
Washington, D. C.

LH

1	1st Asst. Chief Park Ranger	In charge of northern district.
2	Asst. Chief Park Rangers	1 in charge of southern district. 1 in charge of western district.
20	Park Rangers	Patrolling park borders, protect- ing and feeding game.
3	Temporary Park Rangers	Making patrols

In addition to the regular employees listed above under appointment, the following were employed temporarily by the day:

	<u>On Feb. 1st</u>	<u>On Feb. 28th</u>
Laborers	3	3
Skilled laborers	2	2
2-horse teamster	1	0
4-horse teamster	<u>0</u>	<u>1</u>
	6	6
Appointees	<u>62</u>	<u>62</u>
	68	68

Leaves of Absence

During February, annual leaves of absence were granted as follows:

A. W. Burney	Assistant Engineer	Feb. 2-27, 20 days
August C. Neumann	Master Painter	Feb. 6, 13, 20, 27, 5 da.
Eri A. Allan	Chief Lineman	Feb. 4(noon)-6(noon), 1 da.
Earl Bowman	Park Ranger	Feb. 7-28, 17 da.
Deate T. White	Foreman	Feb. 11-11, 1 da.
Clarence Scoyen	Laborer	Feb. 11-11, 1 da.
Bivind T. Scoyen	Asst. Ch. Pk. Ran.	Feb. 11(noon)-11, $\frac{1}{2}$ da.
Joseph Douglas	" " " "	Feb. 11(noon)-18(noon), 5 da.
Andrew R. Edwin	Clerk	Feb. 11-17, 5 da.
Charlie R. Stinnett	Blacksmith	Feb. 19-22, 2da.
Joseph Douglas	Asst. Ch. Pk. Ran.	Feb. 21(noon)-25, $3\frac{1}{2}$ da.
Sam T. Woodring	Chief Park Ranger	Feb. 21(noon)-25, $3\frac{1}{2}$ da.
Wm. L. Bicket	Carpenter	Feb. 21-27, 5 da.

143
Feb.

March 9, 1922

Dear Sir:

The following is my report on Yellowstone Park, and the operation of the park, for February, 1922:

I. GENERAL CONDITIONS:

Weather and traffic conditions were most unusual in February, and the severe winter weather conditions which prevailed greatly handicapped every activity in the open. The heavy snowstorm which occurred February 8th to 11th inclusive, when over 13 inches of snow fell at Mammoth, was so unusual as to call for a special bulletin by the Local Office of the U. S. Weather Bureau, being notable from the unusual amount of snow on the ground at the end of that storm. The special bulletin was, in effect, as follows:

The Greatest depth of snow on the ground at Mammoth Hot Springs for the period covered by the Weather Bureau record, 1903-1922.

March 14, 1906	33.1 inches
March 26, 1917	35.6 "
Feb. 11, 1922	23.3 "

Greatest previous depth for February:

February 28, 1906	23.7 inches
February 27, 1917	23.2 "

When the storm began, there was already a large amount of snow on the ground at Mammoth, and at its close the work of clearing roads and paths necessary to routine work was difficult. For the first time this winter the use of cars to Gardiner had to be abandoned, the two miles nearest to Headquarters being blocked with snow and scarcely passable with teams and sleighs. The lower half of the road was still open for cars, however, and therefore the Transportation Company kept a car at that end of the line and hauled our goods half way, and we in turn used a team and sleigh and hauled the mail and express for that company. The upper end of this road is still impracticable for use of motor vehicles, though for the past few days the Yellowstone Park Transportation Company has been using two two-ton White Trucks linked together, to haul coal from the railroad to keep its heating plant going, but with considerable difficulty requiring sometimes several men along to help shovel drifts, and with small loads. This sort of usage is hard on equipment, and can hardly be considered practicable. We are still using teams with sleighs as a means of transportation to Gardiner.

The mail carrier who has the route between Gardiner and Cooke City was obliged to abandon the use of teams and light sleighs and since February 6th has been using saddle and pack horses to within 7 miles of Cooke, the balance of the distance into Cooke being traveled with skis or snowshoes. This road is quite difficult for saddle and pack horses, and under the present conditions requires about 8 hours of hard riding to get over the 18 miles between Mammoth and Tower Falls Station.

The extreme cold weather which prevailed through January and February added to the difficulty and expense of trying to accomplish anything in the line of outside work, and the necessary travel was performed only with considerable discomfort and at times with hazard.

Weather

The following notes on weather conditions, and the Monthly Meteorological Summary of conditions which is enclosed, are furnished by the Observer of the local Weather Bureau:

Temperature: Monthly mean, 12.9° , is 6.7° below normal. A lower monthly mean temperature has been

recorded but three times in February during the past 36 years. The temperature was generally below normal throughout the month, but extremely cold weather prevailed during the last week, 34° below zero being recorded on the 23rd and 25° below on the 25th. There were 12 days with temperature zero or below; a greater number has been recorded but once only in each of the three winter months since the Weather Bureau record began in 1903.

Precipitation: Total, 1.84 inches, is just normal; occurred as snow and was well distributed through the month.

Snowfall: Total 23.5 inches; normal 15.3 inches. This total has not been exceeded for February since 1899, when 34.0 inches occurred. The principal storm of the month was that of the 8th-11th when 13.1 inches of snow fell. The greatest depth of snow on the ground was 29.6 inches on the 26th, while 29.0 inches remained on the ground at the end of the month. So great a depth of snow on the ground has not occurred in February during the period of record, dating back to 1903. The greatest previous depths at the end of February were 23.7 inches in 1906 and 23.0 inches in 1917. However, when all months of the year are considered, there has been twice when a greater accumulated depth of snow was recorded than was on the ground at the close of February this year, 33.1 inches March 14, 1906, and 35.6 inches March 26, 1917.

Wind: The average hourly velocity, 8.4 miles, is about normal, but the maximum velocity of 42 miles from the south on the 9th has been equaled, but not exceeded, in February.

Sunshine: Percentage of possible 49; Normal 53. Much cloudiness prevailed during the month, there being but four clear days.

As will be noted, the cold was extreme, being 6.7 degrees below normal for February, and following January when the average temperature was 5.1 degrees below normal, makes a combined period of two months with extremes of cold which have made conditions for all animal life hard, and combined with the unusual fall of snow have added much to the expense of winter work and keeping up our plant at Headquarters. More than the usual amount of fuel is required, and we have had much trouble

from frozen water pipes. Freezes have occurred in several places which have never bothered before, and it has been specially noted and mentioned that the Yellowstone River, which is a very swift stream, has frozen over in places never known before.

The average increase in the depth of snow throughout the park during the month of February was approximately 14 inches, and at this writing the snow over the sections where the roads have to be opened in the Spring is about twice what it was a year ago.

The following table shows depth of snow in inches at various points in the park on different dates for comparison:

	1921 <u>Feb. 28</u>	1922 <u>Jan. 31</u>	1922 <u>Feb. 28</u>
Mammoth	5.4	18	29
Norris Station	12.	40	
Riverside "	24	38	45
Gallatin "	18		27
Upper Basin Station	4		50
Bechler "	70		69
Snake River "	58	49	65
Thumb "	50	45	
Lake "	30	33	45
Upper Yell. (Thorofare)	30	40	50
East Entrance	26	30	50
Canyon Station	30	43	56
Tower Falls "	14	26	38
Buffalo Ranch	10	26	41
Soda Butte Station		30	45
Crevice Station		30	45
Hellroaring Cabin		26	

Travel

The following table shows the number entering the park during February as compared with the number entering during February, 1921:

C a r s

	<u>Entering</u>	<u>Carrying</u>	<u>Meals.</u>	<u>Total</u>
February, 1921			15	15
February, 1922			6	6

This travel was all via the northern entrance.

Labor and Supply Market

As there is no demand for labor, and we have not as yet begun to purchase supplies for next season, there are no changes to note in this respect.

II. PERSONNEL:

Employees

On February 1st there were 68 employees on the park payrolls, and the same number on February 28th.

The following list shows the number of employees of various classes serving during the month, with a general statement of the kind of work in which they were engaged:

<u>No.</u>	<u>Class</u>	<u>Kind of work performed</u>
1	Asst. Engineer	In charge of engineering work in the park.
5	Clerks	1 Disbursing Agent and Purchasing Clerk; 1 on cost account work and property; 1 on time keeping, orders, proposals and vouchers; 2 stenographer-typists on stenographic work, files, etc., (1 in San Francisco office).
2	Electricians	Read meters, did necessary line work, and operated power plant regular shifts, including Sundays.
3	Foremen	1 in charge of Headquarters Cerral; 1 repairing sprinkler wagons; 1 on construction. All devoted most of month to harvesting ice crop.
1	Telegraph Operator	Sent and received all Government Western Union messages; operated one shift on telephone switchboard.
1	Telephone Switchboard Operator	Operated telephone switchboard, daily shifts, including Sundays.

1	Master Mechanic	In charge of shops, and of repairs to heavy road machinery.
1	Blacksmith	General blacksmith work, including shoeing horses in shop, overhauling and repairing tools and equipment.
1	Master Painter	General shop work, including painting equipment and buildings.
1	Chief Lineman	In charge of power plant, telephone lines, and of maintenance crews on telephone lines.
7	Laborers	Teaming, freighting, assisting mechanics and miscellaneous work at headquarters, including harvesting ice crop.
1	Handyman	Acting Steward and Master of Transportation.
1	Chief Buffalo Keeper	In charge of tame buffalo herd.
2	Asst. Buffalo Keepers	1 assisting Buffalo Keeper; 1 in charge of hay ranch operations at Slough Creek.
1	Master Plumber	In charge of general plumbing and water and sewer systems.
3	Automobile Mechanics	2 repairing motor trucks and touring cars. 1 on duty at power plant.
1	Carpenter	Repairing buildings at headquarters.
1	Chief Park Ranger	In charge of ranger force.
1	Fish and Game Warden	Special observation and reports on wild animals.

1	1st Asst. Chief Park Ranger	In charge of northern district.
2	Asst. Chief Park Rangers	1 in charge of Southern district. 1 in charge of Western district.
20	Park Rangers	Patrolling park borders, pro- tecting and feeding game.
3	Temporary Park Rangers	Making patrols.

In addition to the regular employees listed above under appointment, the following were employed temporarily by the day:

	<u>On Feb. 1st</u>	<u>On Feb. 28th</u>
Laborers	3	3
Skilled laborers	2	2
2-horse teamster	1	0
4-horse teamster	0	1
	<u>6</u>	<u>6</u>
Appointees	<u>62</u>	<u>62</u>
	68	68

Leaves of Absence:

During February, annual leaves of absence were granted as follows:

August C. Neumann	Master Painter	Feb. 6, 13, 20, 27, 4 da.
Eri A. Allan	Chief Lineman	Feb. 4(noon)-6(noon), 1 da.
Earl Bowman	Park Ranger	Feb. 7-26, 18 da.
Deate T. White	Foreman	Feb. 3-3, 1 da.
Clarence Scoyen	Laborer	Feb. 11-11, 1 da.
Bivind T. Scoyen	Asst. Ch. Pk. Ran.	Feb. 11(noon)-11, $\frac{1}{2}$ da.
Joseph Douglas	" " " "	Feb. 11(noon)-13(noon), 5 da.
Andrew R. Edwin	Clerk	Feb. 11-17, 5 da.
Deate T. White	Foreman	Feb. 11-11, 1 da.
Charlie R. Stinnett	Blacksmith	Feb. 19-22, 2 da.
Joseph Douglas	Asst. Ch. Pk. Ran.	Feb. 21(noon)-25, $3\frac{1}{2}$ da.
Sam T. Woodring	Chief Park Ranger	Feb. 21(noon)-25, $3\frac{1}{2}$ da.
Wm. L. Bicket	Carpenter	Feb. 21-27, 5 da.

John W. McDonald	A. Buf. Keeper	Feb. 21(noon)-28- 5½ da.
Alf. C. D. Henman	Laborer	Feb. 4, 11, 18, 25, 4 da.
Leroy Hill	Pur. Cl. & S.D.A.	" 18(noon)-28, 7½ da.
Nathan A. Sandel	Tele Operator	Feb. 21-28, 6 da.
Deate T. White	Foreman	Feb. 3-3, 1 da.
Charlie R. Stinnett	Blacksmith	Feb. 11-11, 1 da.
George Winn	Park Ranger	Feb. 16(noon)-27, 8½ da.
John D. Fraser	Auto. Mechanic	Feb. 23-27- 4 da.
Charles A. Brant	Handyman	Feb. 27-28, 2 da.
Dan Tripp	Laborer	Feb. 27-28, 2 da.
Eri A. Allan	Chief Lineman	Feb. 23-23, 1 da.
Andrew R. Edwin	Clerk	Feb. 20-23, 3 da.
Roy X. Gray	Laborer	Feb. 27-28, 2 da.
Bert L. Stinnett	Master Mechanic	Feb. 23, 24, 25, 3 da.

III. WORK COMPLETED:

Nothing to report under this heading.

IV. WORK IN PROGRESS:

(a) Construction of Physical Improvements

Nothing to report.

(b) Maintenance and Repair of Physical Improvements

Included under a future heading.

(c) Miscellaneous Improvement Work

Work on the few important jobs in progress continued to some extent, but was hindered materially during February by absence of employees on annual and sick leave; severe weather which required shoveling snow, keeping up extra fires, repairing breaks in the water and sewer system, etc., and the extensive job of harvesting the annual ice crop required the use of several of the men and teams ordinarily used for other purposes.

Heating Plant in Shops: But little progress was made due to putting up ice and lack of material which had been ordered. This work is now again under way.

Painting Department: The Master Painter worked alone most of the month as his assistant was used to help put up ice. He did several small jobs of painting inside,

papering, and renovating employees quarters, and got his shop in readiness for reception of trucks and motor transportation which is to be painted.

Foreman Ferrell, who has been engaged in overhauling sprinkler wagons, was also used in putting up ice, and devoted but little time to his shop work.

The Master Plumber made temporary repairs to the 4-inch main which broke as reported last month. He devoted much time to thawing out frozen pipes and making slight repairs where they were broken, and made additional installations and repairs to plumbing in employees quarters. Stationary laundry tubs were installed in two sets of quarters.

Headquarters Corral: The foreman devoted practically the whole month to putting up ice, and also so used his men except for one man and team which were constantly on the go doing general hauling of garbage, fuel and supplies at Headquarters. One light team, with a driver furnished from the storehouse force, was detailed to hauling supplies from Gardiner, the trip to the transfer about half way being made daily to meet the mail and express which was hauled on the mail truck as far as the snow conditions would permit it to come.

Transportation and Storehouse Force: With the exception of the man driving the express team mentioned above, and the absolutely necessary duties at the storehouse keeping up fires where required and occasionally issuing supplies, the storehouse men devoted their time to the work of packing the ice that was harvested. But a small amount of freight and supplies were received during the month.

Harvesting the Ice Crop: The new ice crop, frozen on the concrete reservoir during January, was ready for harvest February 1st. The work of cleaning off the snow and making other preparations began on the last days of January, and by February 4th the full crew was put to work. Three single teams with sleighs were used for hauling, with the necessary men selected from those who could be spared from the regular force for cutting, loading and packing. The work was completed at the end of February and the total ice cut and stored was about 655 tons, of which 186 were stored for our own use, 15 to the postoffice store, 14 to the Curio Shop, 137 to the Camps Company and 301 to the Hotel Company, these concessioners paying their share of the expense of the work. The ice is of a beautiful quality and is packed in fine condition.

The Carpenter did a few small repair jobs to buildings at Headquarters, worked a few days on forms for concrete in connection with the new heating plant, and built a new platform outside of one of the big store-rooms. He also began the work of laying floors in the Superintendent's quarters on the main floor, and made good progress in this work.

The Blacksmith did a little work on repairing equipment, shod horses when necessary, and spent several days on leave.

At the Garage the two mechanics on duty put in most of the month in connection with the general overhauling of the motor vehicles. 1 of the Nash Quad trucks completed in January was moved to the paint shop. The 3 International Trucks which were done at the end of January except for a few finishing touches were completed. The 2-ton Signal Truck was taken into the shop and torn down preparatory to giving it a thorough overhauling. Another 5½-ton Mack truck was torn down and parts ordered. One of the 2-ton Mack trucks was looked over very carefully and such slight repairs as it required were made. The other 2-ton Mack which needed more work was thoroughly overhauled and completed ready for the paint shop. The work on the 2 White touring cars, the big Macks, and the Fords, is still held up waiting for parts. Generally speaking the progress on this work is excellent and they will all be in good shape for work when needed in the spring.

The Telephone System and Power Plant were maintained and operated by the regular force during February. The Power Plant was run constantly, the results with a comparison of those of February, 1921, being shown as follows:

	<u>1921</u>	<u>1922</u>
Total current generated, in KW hours	9850	17040
Of this, sold to public utilities @ 5¢ per KW hr	467	996.6
Consumed for Street Lighting	806	2348.0
Balance, consumed in Government buildings, for power and lighting, lost on lines in transit	8577	13495.4
Peak load during month in Kilowatts	36	44

Daily reports of these operations were submitted, and these figures represent their summary as checked by the automatic devices at the power plant for recording production and consumption of current.

The Switchboard and Telegraph Office was open daily from 7:30 A.M. to 8:45 P.M., and the total business handled during February was as follows:

Switchboard Calls:

On Government local lines	3010
On Hotel Company lines	173
On Long Distance Connections	<u>43</u>
	3226

Telegrams Handled:

Government sent	55	
Government received	<u>28</u>	
	83	
Commercial sent	10	
Commercial received	<u>13</u>	
	23	<u>106</u>
Total messages handled during February		<u>3332</u>

Collections were made for long distance messages sent and return made to the Mountain States Bell Telephone and Telegraph Company; and for commercial telegrams sent and accounted for to the Western Union Telegraph Company.

Office Force: The Assistant Engineer was on leave during the month and no work was accomplished in his line. The usual routine work in the office was performed, but with considerable hindrance due to leaves of absence and sickness. 755 letters were received and 577 sent out during February.

In the Chief Ranger's Office the correspondence with prospective candidates for future employment occupied considerable time, and much time was spent preparing material for a proposed manual of instructions for the ranger service in this and other parks. Special instructions to cover 13 of our park stations was completed for this manual.

Protective Force

Due to the severe winter conditions requiring special care in handling the game situation, it was necessary to concentrate the patrols along the north line to a great extent, at the expense of some of the inner stations where there is but little wild life to look after at this time. The Chief Ranger, his first assistant, game warden, two assistant chief rangers, and several rangers, were engaged throughout the month in the Northern District and just outside in the State assisting the game wardens.

Chief Park Ranger Woodring made special patrols towards Grevice and in the vicinity of Gardiner, and February 18 to 20 with his 1st Assistant went into the Yellowstone Valley outside of the park as far as Daily Basin, looking over the condition of the elk outside and conferring with the game wardens working in that territory. Mr. Woodring also made official trips to Bozeman, Montana, and to Laramie, Wyoming, and Salt Lake City, Utah, during the month for the purpose of conferring with men who are considered to be good prospects as park rangers.

Game and Fish Warden McBride made patrols along the north line, and covered the territory outside, which on one occasion, the 15th to 18th, included a long trip down the Yellowstone Valley to Carbella where he also investigated game conditions and conferred with the game wardens, and made special report.

1st Asst. Chief Park Ranger Harry Trischman patrolled over the Northern District including Tower Falls, Soda Butte, Slough Creek, Hellroaring, Grevice, and the special trip with Chief Ranger Woodring referred to above.

The main result of the special trips to Carbella by the men mentioned above was the assurance that in general the elk feeding down the Yellowstone Valley are still in good shape and on good feed; that they have not as yet devastated haystacks and ranches to an extent to cause any

special alarm; that there is an occasional violation of law and a few elk have been killed for teeth, but the State's representatives are following up these and they are being held at a minimum. They also decided that one section, Standen Basin, was not being adequately protected due to lack of enough men, and a ranger is being sent there to assist for a time. Other results and observations of this trip are recorded under appropriate headings in other parts of this report.

Other intensive patrols were made in the Northern District and in the vicinity of the Park line by the rangers stationed at Gardiner, Grovice, Mammoth, and by additional rangers taken from stations where they were not needed so badly including Assistant Chief Ranger Joseph Douglas, who came in from Lake District on February 6th.

At Tower Falls, one ranger fed the horse herd and made a few patrols.

Regular patrols were made over the Soda Butte District. Ranger Winn made a trip to Headquarters and went on leave 15th to 20th, and Ranger Carter made one trip to Headquarters during the month.

The Rangers stationed at Riverside Station made one patrol to Upper Basin and thoroughly looked over the country around the hot springs for elk. They also made a trip to Morris Basin.

Regular patrols were made from Gallatin Station, over the entire District looking for elk, one to Riverside, and several short patrols were made in the country outside of the park in conjunction with the State Game Wardens, giving them assistance in the matter of game protection.

At Lake Station a patrol was made towards Sylvan Pass to repair the telephone line.

Therofaro Station: Bowman on leave and assisting at Lake early in the month. Butler at Station until the 18th, and at Lake the balance of the month.

East Entrance, regular patrols, including one towards Sylvan Pass looking for break in telephone line.

Bechler Station, regular patrols.

Hellroaring was maintained as a regular station to to February 16.

The Buffalo Keeper and two men to assist him fed the herd at the Ranch. One man was stationed on Upper Slough Creek and one on Lower Slough Creek, feeding hay to elk, during the entire month.

As with our other activities, the work was at times seriously handicapped by men going on leave or absence, often necessarily through flu or other slight sickness, and by the extremely cold weather and deep snow, the latter making travel even by skis most difficult.

Improvements by Park Utilities

There was nothing of interest to report in this line, as the only employees of concessioners in the park were the winter keepers, and a few men working for the Transportation Company at Mammoth, painting cars and keeping up buildings and equipment.

VI. PLANS FOR PROPOSED WORK:

Our plans for March include the continuance of the repairs to and upkeep of the buildings, power plant, shops, offices, and general plant at park headquarters; repairing and painting trucks, sprinkler wagons and other equipment, working on the heating plant in the garage, and outlining plans for next summer's work. The protective force must continue the present work of feeding the buffalo at the ranch, the elk on Slough Creek, and the elk and antelope near Gardiner, which was begun on February 23th on account of the severe weather conditions and is still necessary. Intensive patrols both inside and outside of the park must be continued along the north line so long as there is any necessity for them. Special care of the herd near Gardiner and all the activity possible in exterminating the coyotes which are preying upon the herd. of antelope.

Plans can be made for appointments to the ranger and other forces, purchase of supplies, and many other general plans for next season's work, can be made during March.

VII. POLICIES:

No change in policies were noted during February.

VIII. COST OF OPERATIONS:

The monthly cost report has not been completed, but

will be forwarded as soon as practicable.

IX. OTHER MATTERS OF INTEREST:

Wild Animals

Weather records indicate that January and February were much colder months than they were in 1920, the year that our wild animals suffered from cold and starvation and so large a percentage were lost. Had the forage conditions been the same this year, we would undoubtedly have suffered another serious loss, but fortunately there is still a goodly supply of forage on the range, and while the snow is very deep, it is still easy to penetrate, and the animals appear to get at it without much trouble, especially those ranging highest up in the mountains. Attempts have been made to get a count of them, but they are still scattered in small bunches and this is impossible under present conditions. But this continued cold weather is beginning to leave its mark upon them, and unless it lets up very soon I am afraid we may have considerable loss among our elk and antelope.

Elk: As in January, reports indicate that by far the larger number of our elk are still ranging high. Several hundred were seen down the valley of the Yellowstone by the rangers making special patrols in that direction, and these, like those inside of the park, are scattered and in small bands. Therefore, it is difficult to estimate their actual number. The Chief Ranger's report estimates that about 70 elk died in the park during February, the loss being principally among the calves. Most of these also were found in the vicinity of Gardiner. 15 of them, however, being reported by Ranger Winn between Cottonwood and Hellroaring.

First Assistant Chief Ranger Harry Frischman covered the entire elk country more thoroughly than anyone else during the month and during the few days he was covering it he reported having counted 3478 inside of the park in the northern district. Ranger Winn traveling from Headquarters to Hellroaring, Slough Creek, Buffalo Ranch and Soda Butte, counted 893, and it was on this trip that he reported the 15 dead calves.

On February 1st Ranger Buckett reported a herd of 720 elk on Hellroaring Mountain. On February 14th this herd was counted again and numbered 290, the balance having evidently drifted to some other section.

The feeding of elk at the Upper and Lower Slough Creek ranches was continued daily throughout the month. 1626 were counted at one time and it was estimated that about 1500 was the average daily number of elk being fed. 38 head were also feeding with the horse herd at Yancey's, and 62 with the buffalo at the Lamar River Ranch. It was found necessary to begin feeding the elk near Gardiner in order to attract them away from the range of the antelope, so they also could be fed, and the feeding in Gardiner Canyon was begun on February 28th.

On February 24th it was reported by Mr. Walter Hoppe, who has a ranch adjoining the park line 3 miles west of Gardiner, that the park fence was broken and about 800 elk were over-running his place. Men were dispatched to investigate and remedy the conditions and it was found that there was a small hole in the fence through which two or three hundred elk had escaped. These were herded back into the park and the hole in the fence repaired. Careful investigation and inquiry indicates that the depredations from elk outside of the park down the Yellowstone valley have not been very serious to this time, amounting in most cases to not over two or three tons of hay.

The rangers at the Gallatin Station covered their territory thoroughly and saw 55 elk. It was estimated that there were about 80 wintering in that district. Most of this Gallatin herd is wintering as usual outside of the park. The valley of the Madison River and up the Firehole as far as Upper Basin was also carefully covered by rangers from Riverside station, who reported seeing 72, all in good condition.

Antelope: Our antelope herd is the choicest of all of our animals and is suffering most from the severe winter conditions. There is much more than the usual amount of snow on their range just inside the park near Gardiner, and the snow is sufficiently crusted so it will support the weight of a coyote but the antelope break through. The consequence is that the coyotes have killed quite a large number of our antelope, and other have died from severe weather. Every effort is being made to hold the coyotes and wolves down and many have been killed by our rangers. The present condition is not so much due to the great number of coyotes but to the snow conditions which make it impossible

for the antelope to get away. The question of the future care and protection of these animals is one of the most serious problems that we have in connection with our wild animals and must be carefully considered from every standpoint if we are to save them from total extermination.

Buffalo, Tame Herd: The tame herd of buffalo was fed at the Buffalo Ranch daily, requiring the work of from two to three men, as the feeding grounds are located some 2 miles from the main ranch. A total of 105 tons of hay was fed during the month.

Buffalo, Wild herd: Plans were made to try to locate the wild herd during February but due to the necessity for concentrating our forces on the north line, in addition to sickness, leaves of absence, etc., this trip was not made and is still to be accomplished.

Deer: A few dead deer were reported during the month but as a rule they are in good condition. A few have been killed by coyotes.

Moose: Reports indicate the moose are wintering in good condition. The rangers at Upper Yellowstone reported having seen about 100 during the month, and a few were also seen in the Gallatin district.

Mountain Sheep: 48 were seen by rangers during the month in the usual places in the northern district. They appear to be thriving.

Predatory Animals: Park Rangers Henry Anderson devoted practically his whole time to killing predatory animals during February, using firearms, traps and poison. He has the situation well in hand. A total of 130 coyotes and one wolf have been killed during the winter.

Conditions Outside of Park

The elk, deer, and a few antelope which are wintering just outside of the park along the northern boundary, are, according to reports, still in excellent shape and the losses will not be very great. Strong cooperation is still maintained with the State Game Wardens and the Forest Rangers who are specially charged with the protective work this winter, and while a few depredations have been reported, they are not frequent enough to become alarming. A few cases of elk killing for teeth have been reported, and the game

wardens have in all cases exerted every effort to get evidence to place the violation on the right parties, sometimes successfully. There was much apprehension among the farmers in the valley that their haystacks would be devastated, but all depredations by elk have been pretty carefully examined by our rangers and the game wardens, and such assistance as possible looking to prevention of such devastation has been given, and to date they have not been very serious--occasionally a few tons of hay, and often an investigation has indicated that very likely the farmer was at fault and his stacks were not reasonably protected. Cooperation with the outside authorities will be kept up as long as any need exists.

Domestic Animals

38 surplus horses were kept at Yancey's, requiring about 15 tons of hay to feed them during February.

Birds

The usual winter birds, including ducks, Clarke Crows, Magpies, crows, jays, etc., were in evidence about Headquarters.

Arrests & Violations of Law

No violations of law inside of the park were reported during the month and no arrests were made. On several occasions, our rangers working on the outside assisted the State authorities with evidence relating to violation of the State's game laws.

United States Commissioner John F. Meldrum left the park on February 16th for his annual vacation, which he intends to spend in Denver.

Sickness and Medical Service

Dr. W. E. Crawbuck, our resident physician, reports that he made 24 official calls upon park employees during the month of February. During the latter part of the month the epidemic of influenza, which is quite prevalent throughout the country, was much in evidence among our employees. Most cases were light but many of them confined to their homes for a period of from two to ten days, interfering seriously with our regular operations.

Mrs. Stinnett, wife of Charlie R. Stinnett, our blacksmith, died at Chico Hot Springs on February 21st following an operation.

Natural Phenomena

The Mammoth Hot Springs continue their unusual activity which has been in evidence since last Fall. The patrols to the geyser basins did not note any unusual occurrence among the geysers. The winter keeper for the Hotel Company at Old Faithful reports that the Giantess played on February 2nd and again on February 3rd, this being the first eruption of the Giantess since October; also that the Beehive played on the night of February 3rd.

Motion Pictures

No motion picture permits were issued during the month, nor were any pictures of this sort taken during February.

School

The park school for the benefit of the employees children was maintained during the month by Mrs. Harriett. Copy of her monthly report is enclosed.

Miscellaneous

Entertainment: Picture shows were held weekly in our Amusement Hall at Headquarters for the benefit of employees.

Religious Services: Services were held in the Chapel morning and evening of February 19th by the Rev. O. H. Farseth, Northwestern missionary of the Norwegian Church, whose Headquarters are Spokane, Washington.

Wedding: Miss Grace D. Hill, daughter of our Chief Clerk and Special Disbursing Agent, was married in Billings, Montana, on the evening of February 21st, to Mr. Robert Roy Robinson, Jr., of Casper, Wyoming.

IX. RECEIPTS AND REMITTANCES:

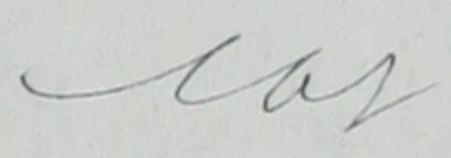
The monthly report of revenues due, collected, and transmitted during February, on the regular blank forms, is enclosed in duplicate. The total amount, namely, \$8.73, is described as follows:

Postal Money Order No. 48588, dated February
6, 1922, drawn by the Postmaster at
Yellowstone Park, Wyoming, on the
Postmaster at Washington, D. C.,
amount \$4.13

Check No. 1679, dated February 18, 1922, drawn
by Yellowstone Park Camps Company,
Livingston, Montana, on the North-
western National Bank, Livingston,
Montana, to your order, amount 4.60
\$8.73

Acknowledgment of the receipt of the enclosed
money is requested.

Cordially yours,


Chester A. Lindsley,
Acting Superintendent.

The Director,
National Park Service,
Department of the Interior,
Washington, D. C.

Enclosures.

CAL:JSS

U. S. DEPARTMENT OF AGRICULTURE, WEATHER BUREAU.

MONTHLY METEOROLOGICAL SUMMARY.

Station, YELLOWSTONE PARK, WYO.; month, FEBRUARY, 1922., 19

Date.	TEMPERATURE. (Degrees Fahrenheit.)			Precipitation. (In inches and hundredths.)	Character of day.	Sunshine, percentage.	ATMOSPHERIC PRESSURE. (Reduced to sea level; inches and hundredths.)	
	Max.	Min.	Mean.				Mean	lowest
	20	-3	8	.11	PtCldy	54	Mean 30.10	highest 30.92, date 28
							lowest 29.27	date 9
1	12	5	8	T	Cloudy	8	TEMPERATURE.	
	17	9	13	0	PtCldy	45	Highest 39, date 9; lowest -25, date 28	
	25	8	16	T	Cloudy	25	Greatest daily range 38, date 23	
3	18	1	10	.08	PtCldy	45	Least daily range 7, date 2	
4	22	-1	10	T	PtCldy	59	Mean for this month in	
5	39	12	26	0	PtCldy	92	1871 80 89 20 98 25 07 27 16 24	
6	33	18	26	.06	Cloudy	24	1872 81 90 18 99 11 08 23 17 20	
7	39	23	31	.37	Cloudy	6	1873 82 91 14 00 -- 09 21 18 18	
8	27	0	14	.30	Cloudy	25	1874 83 92 24 01 18 10 15 19 19	
9	24	-3	10	.31	Cloudy	22	1875 84 93 16 02 27 11 15 20 21	
10	19	4	12	0	PtCldy	79	1876 85 94 12 03 13 12 22 21 24	
11	19	2	10	T	PtCldy	41	1877 86 95 19 04 24 13 10 22 13	
12	17	-3	7	T	Clear	100	1878 87 14 96 25 05 17 14 20 23	
13	26	5	16	0	Cloudy	7	1879 88 27 97 20 06 24 15 26 24	
14	33	20	26	.16	Cloudy	15	Normal for this month 19.6	
15	32	16	24	T	PtCldy	62	Absolute maximum for this month for 35 years 51	
16	33	14	24	.03	Cloudy	26	Absolute minimum for this month for 36 years -36	
17	30	8	19	T	Cloudy	23	Average daily excess (+) or deficiency (-) of this month as compared with the normal -6.7	
18	36	16	26	.17	PtCldy	41	Accumulated excess (+) or deficiency (-) since January 1 -344	
19	30	4	17	.11	Cloudy	8	Average daily excess (+) or deficiency (-) since January 1 -5.8	
20	4	-20	-8	.05	PtCldy	41	PRECIPITATION.	
21	14	-24	-5	T	PtCldy	74	Total this month 1.84; snowfall 23.5 (normal 15.3)	
22	26	-5	10	.01	PtCldy	100	Greatest precipitation in 24 hours 0.53, date 10-11	
23	30	0	15	.05	Cloudy	43	Snow on the ground at end of month 29.0	
24	21	-6	8	.03	Clear	92	Total precipitation this month in	
25	10	-15	-2	0	Clear	100	1871 80 89 1.93 98 1.21 07 0.58 16 0.59	
26	8	-25	-8	0	Clear	100	1872 81 90 6.65 99 3.40 08 1.22 17 1.83	
27							1873 82 91 2.79 00 1.65 09 0.65 18 2.03	
28							1874 83 92 2.10 01 0.72 10 1.61 19 1.64	
29							1875 84 93 0.79 02 0.61 11 1.10 20 1.02	
30							1876 85 94 1.12 03 0.25 12 0.48 21 0.62	
31							1877 86 95 0.34 04 1.50 13 0.52 22 1.84	
32							1878 87 4.65 96 2.07 05 0.60 14 0.78 23	
33							1879 88 2.02 97 0.80 06 1.84 15 0.39 24	
34							Normal for this month 1.84	
35							Excess (+) or deficiency (-) of this month as compared with the normal 0	
36							Accumulated excess (+) or deficiency (-) since January 1 -1.50	
37							MEAN RELATIVE HUMIDITY (Percentage).	
38							6 a. m., 85; 12 noon, 66; 6 p. m., 69	
39							WIND.	
40							Prevailing direction South; total movement 5628 miles;	
41							average hourly velocity 8.4; maximum velocity (for five minutes) 42 miles per hour, from 9	
42							WEATHER.	
43							Number of days, clear 4; partly cloudy 12; cloudy 12;	
44							on which .01 inch, or more, of precipitation occurred 14	
45							MISCELLANEOUS PHENOMENA (dates of).	
46							Auroras 0; halos: solar 24, lunar 0	
47							Hail 0; sleet 0; fog 0	
48							Thunderstorms 0	
49							*Frost: light ---; heavy ---; killing ---	
50	23.7	2.1	12.9	1.84		49		

NOTE.—“T” indicates trace of precipitation.
In the autumn frosts are not recorded after the occurrence of “killing,” except in Florida and along the immediate coast of the Gulf of Mexico.

E. H. Fletcher, Observer.

Weather Bureau.